

## DESIGN, PRODUCTION & REPAIR – MANUFACTURING PATHWAY –

This pathway focuses on using engineering, technology, and production processes to design, manufacture, and improve products that meet industry and consumer needs. It includes topics like manufacturing systems, computer-aided design (CAD), machining, materials science, robotics, quality control, and the ethical and safety standards of production. Students learn how to operate advanced manufacturing equipment, analyze production efficiency, and apply problem-solving skills to create high-quality, innovative products.

**CAREERS INCLUDE** Manufacturing Engineer, Production Technician, CNC Machinist / Programmer, Industrial Engineer, Quality Control Inspector, Machine Operator, Mechanical Engineer, Process Engineer, Assembly Technician, Maintenance Mechanic, Robotics Technician, Tool and Die Maker, Production Supervisor, Automation Specialist, Fabrication Technician, Manufacturing Manager, Plant Engineer, Welding Technician, Industrial Designer, Materials Engineer

### SAMPLE PLAN OF STUDY\*

\*This course has a prerequisite, †This course is offered at CTEC, ¥This course counts as a STEM Elective

<p><b>FRESHMAN YEAR</b></p> <p>(1.0) English                  (1.0) Math (based on math course progression)                  (1.0) Science                  (1.0) Social Studies                  (1.0) Physical Education                  (1.0) Performing/Fine Arts Credit                  (1.0) <b>Drafting/CAD</b>                  (0.5) <b>Introduction to Skilled Trades</b>                  (0.5) Electives</p>	<p><b>SOPHOMORE YEAR</b></p> <p>(1.0) English                  (1.0) Math (based on math course progression)                  (1.0) Science                  (1.0) Social Studies                  (0.5) Health                  (0.5) <b>Production Blueprint Reading</b> *†                  (0.5) <b>Introduction to Welding</b> *†                  (1.0) <b>Production Methods I</b> *†¥                  (1.5) Electives</p>
<p><b>JUNIOR YEAR</b></p> <p>(1.0) English 11/AP Lang &amp; Comp                  (1.0) Math (based on math course progression)                  (1.0) Science                  (1.0) Social Studies                  (0.5) Communications Credit                  (1.0) <b>Production Methods II</b> *†¥                  (1.0) <b>Robotics I</b> †¥                  (1.5) Electives</p>	<p><b>SENIOR YEAR</b></p> <p>(1.0) English 12 or AP Lit &amp; Comp or AP Lang &amp; Comp                  (1.0) Math (based on math course progression)                  (1.0) Science                  (0.5) Political Participation or Con. Law/AP Government                  (0.5) Financial Literacy                  (1.0) <b>Work Experience in Manufacturing</b> *                  (1.0) <b>Elective at CTEC</b>                  (2.0) Electives</p>

#### BOLDED COURSES LEAD TO PATHWAY COMPLETION

**PATHWAY COURSES:** Pathway completion requires students to complete three (3) credits in the pathway, with at least two (2) of those credits being a combination of technical and application-level courses. Additionally, a student must earn one of the following: an industry-recognized certification (IRC), nine (9) + college hours aligned to the pathway, or complete a high-quality work-based learning experience - Entrepreneurial Experience (EntX), Client Connect Project (CCP), or Internship.

INTRODUCTORY LEVEL	TECHNICAL LEVEL	APPLICATION LEVEL
Introduction to Skilled Trades Production Blueprint Reading *† Introduction to Welding *†	Production Methods I *†¥ Drafting/CAD Robotics I †¥	Production Methods II *†¥ Digital Electronics *†¥ Work Experience in Manufacturing *

<p><b>Other Recommended Courses</b></p> <p>Engineering Design ¥                  Robotics II *†¥</p>	<p><b>Opportunities for Pathway Completion:</b></p> <p>Production Methods I – IRC, OSHA- 10 certification                  Work Experience in Manufacturing – CCP or Internship</p>	<p><b>Graduation Requirements:</b></p> <p>English – 4 credits                  Math - 4 credits                  Science – 3 credits                  Social Studies – 3.5 credits                  STEM Elective – 1 credit                  Fine Arts – 1 credit                  Communication – 0.5 credit                  Financial Literacy – 0.5 credit                  Physical Education/Health – 1.5 credits                  Postsecondary Assets – 2 required</p>
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\*This sample plan of study offers an example of what a student's individual plan of study in this pathway might look like. Please note that some courses may not be offered on an annual basis and participation in classes may be subject to space availability.